



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

To: Olga Odiott

From: Kevin Sweeney, Senior Entomologist

A handwritten signature in black ink, appearing to read "Kevin Sweeney", with a checkmark at the end.

Date: May 17, 2012

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD

DP barcode: 396538

Decision no.: 457081

Submission no: 906183

Action code: R310

Product Name: Bugz-No-More

EPA Reg. No or File Symbol: 88665-R

Formulation Type: concentrate

Ingredients statement from the label with PC codes included: 1.23% deltamethrin (PC code: 097805)

Application rate(s) of product: One gallon of 0.06% deltamethrin dilution per 1000 square feet. Repeat no more than once every 7 days.

Use Pattern: crack and crevice, pin stream, spot, coarse/low pressure sprays (25 psi or less).

OCSPP Guidelines 810.3500 and 810.3400 to the extent they apply.

I. Action Requested: Review: a study in which product applications were made to surfaces and evaluated against mosquitoes (*Aedes aegypti*); a study characterizing test samples; and a study awaiting an MRID that explains the preparation of test samples in the mosquito study.

II. Background: Registrant submitted a new product with a label that includes surface applications, primarily as a residual treatment, for control of mosquitoes.

III. MRID Reviews:

MRID48646916. Knox, D.E. 2011. Characterization of Active in a Sample of Test Substance. Eurofins Product Safety Laboratories, Dayton, NJ.

This study was designed to comply with GLP.

Purpose: To certify the level of active ingredient in a sample of Long Lasting Insecticide Concentrate.

Materials and Methods:

Analytical Method: High Performance Liquid Chromatography (HPLC) was used and a deltamethrin reference standard was available. Testing included 3 replicates.

Sample: The sample to be tested was characterized as a 1.23% deltamethrin solution.

Results:

Deltamethrin detection ranged from 0.67% -0.71% with the mean value equaling 0.68%. Recovery in the reference standard was characterized and acceptable.

Conclusion: The study is acceptable. Using standardized methods, the study director only detected 0.68% deltamethrin in a sample that was characterized by the sponsor as containing 1.23% deltamethrin. In the efficacy studies, the sponsor rounded off the dilution to 0.7% but also prepared calculations based on 1.23%. The basic CSF does not reflect the discrepancy in deltamethrin detection and recovery. The registrant's explanation is that the analytical method was destructive or the microencapsulation chemistry prevented deltamethrin from being released during extraction for detection via HPLC.

MRID48646915. Foard, T. 2011. The Efficacy of Substrates Treated with a Residual Microencapsulated Deltamethrin Formulation (Bugz-No-More Insecticide) and Aged Indoors, Tested Against Mosquitoes.

This was a non-GLP study. In addition, the registrant submitted a report on May 15, 2012 by email that is currently at the front end where it will be assigned an MRID entitled: "Todd, R.G. 2012. The Application of Bugz No More Insecticide to Three Substrates for the Residual Control of *Aedes aegypti* in a Laboratory Test."

Both studies are reviewed below.

Purpose: To determine the residual efficacy of the subject product against the mosquito, *Aedes aegypti*, on three types of treated surfaces.

Materials and Methods:

Test location: Insect Control and Research, Inc. (ICR) in Baltimore, Maryland

Test species: Adult female *Ae. aegypti* mosquitoes that were 3-8 days old. Mosquitoes originated from the ICR colony. The protocol also mentioned sand flies but no results or procedures were reported. The study director noted that sand fly study results would be submitted in a separate report.

Test substance: Subject product dilutions were 0.7% and 1.23 % deltamethrin.

Environmental conditions: 78° F and RH \geq 47%. Tests were conducted under lighted conditions.

Test surfaces: Test surfaces were 5-inch by 5-inch tiles composed of primed wood or painted metal or unpainted drywall.

Test chamber: Test surfaces were placed on aluminum foil lining the bottom of a metal pan (18" x 26"). Surfaces were spaced in a manner to allow six to ten oz. clear polystyrene cups coated with Fluon to be placed over them with the bottoms facing up.

Surface treatments: 0.06% deltamethrin solutions were prepared. One batch (Group A) was made from a 0.7% deltamethrin dilution. A second batch (Group B) was made from a 1.23% deltamethrin dilution. However, based on a chemical analysis done with each batch, the dilution for both may have equaled 0.7%. If the latter is the case, then Group B may have contained less than 0.06% deltamethrin, probably about 0.03-0.04%.

For Group A, the study reports 81 grams of 0.06% dilution sprayed over a 20 square feet area where panels were placed and treated. This resulted in an application rate of 4.05 g per square foot. For Group B, the amount applied equaled 76 g. This was equivalent to 3.8 g per square foot. The product label recommends that 1 gallon of 0.06% dilution be applied per 1000 square feet. According to the label, on a weight basis, the amount of deltamethrin to be applied per square foot is 2.271 mg. In this study, Group A received (4.05 g x 0.0006) 2.43 mg of deltamethrin/square foot. Group B received (3.8 g x 0.0006) 2.28 mg of deltamethrin per square foot if the dilution was 1.23 % and approximately 1.14 mg per square foot if the dilution was only 0.7%. The rates used in the experiment were close enough to the label rate. In the case of Group A, they were slightly higher by approximately 0.15 mg per square foot. Note that the study director reported an application rate of 2.56 mg/square foot but I could not calculate the same value.

Treatments and replications: Treatments were divided into Group A and Group B. In Groups A and B, the first treatments were a freshly sprayed panels of each surface, which were not aged. The second group treatments were panels of each surface type that were aged for seven days. Untreated control panels were included in all testing. There were 10 replicates per treatment per surface. Each replicate contained 10 adult female mosquitoes.

Experimental procedure: The test chambers were prepared as described above. Mosquitoes were aspirated into the cups through a hole in the cup bottom. The hole was sealed when mosquito transfer was completed. After a 5 minute exposure time, the mosquitoes were aspirated to clean cups. Knockdown and mortality were assessed at 1, 2, 24, and 48 hours post-treatment.

Results:

% Mortality Values:

Control: Control mortality was less than 10% in all treatments.

Product treatment: Abbott's Formula was applied to correct for control mortality in the reporting of treatment results.

Group A provided 90% or greater kill of mosquitoes on primed wood and unpainted drywall. Group A solutions were ineffective on painted metal, with 55% kill on samples aged for seven days.

Group B provided 90% or greater kill on unpainted drywall. Only 62% mortality was achieved on freshly treated primed wood but 97% mortality was recorded at seven days post-treatment. This dilution was ineffective on the painted metal surface with mortality ranging from 64-80%.

Conclusion: The study is **acceptable** and supports a claim of up to seven days against *Aedes* mosquitoes on porous surfaces only with a 0.06% dilution. This supports the label dilution and rate. Non-porous surfaces should be off-labeled as the product was non-effective on them in these tests.

IV. Entomologist's Recommendations:

1. The submitted data do support the following label claims/use patterns:
 - a. The label rate of 1 gallon of a 0.06% deltamethrin dilution applied per 1000 square feet.
 - b. A reapplication interval of 7 days.
 - c. The sites listed on the label.
 - d. The control of *Aedes* spp. mosquitoes only. Application are effective only on porous surfaces.

e. Claims for kill/control of dengue vectors only.

2. The data do not support:

a. A general claim for killing/controlling adult mosquitoes. List *Aedes* spp. mosquitoes only.

b. Spraying on non-porous painted surfaces.

c. Kill/control of vectors of West Nile virus/fever, malaria and Eastern Equine Encephalitis.

3. In addition, the mixing table requires correction:

a. For each gallon of finished 0.06% deltamethrin solution add 6.5 oz of concentrate to one gallon of water. The table should read as follows:

MIXING INSTRUCTIONS:

Triton's Bugz-No-More Insecticide is a suspension concentrate that must be diluted with water before applying with hand-held or power sprayer equipment to the sites and surfaces listed on this label. Refer to that table below for the amounts of water and Bugz-No-More Insecticide to add to prepare the desired amount of 0.06% deltamethrin finished dilution. The finished dilution must be agitated after mixing and before an application is made. Prepare only the amount of finished dilution needed. Do not store finished dilution overnight.

To Mix the Desired Amount of 0.06% Finished Dilution of Bugz-No-More Insecticide *	Start with (gallons of water)	Add (fluid ounces of Bugz-No-More Insecticide)	Complete mixing by adding (gallons of water)
1 gallon of finished dilution	0.5	6.5 fl. oz.	0.5
5 gallons of finished dilution	2.5	32.5 fl. oz. (or 1 quart + 0.5 fl. oz.)	2.5
10 gallons of finished dilution	5	65 (or ½ gallon + 1 fl. oz)	5
100 gallons of finished dilution	50	650 (or 10 gallons + 10 fl. oz.)	50

* Percentage weight of active ingredient to weight of spray dilution

Common units of measure:

1 gallon = 128 fluid ounces

½ gallon = 64 fluid ounces

1 quart = 32 fluid ounces

1 pint = 16 fluid ounces

4. Remove all references to "11 oz to 1 gallon of water" from the label.

5. The label is somewhat confusing regarding indoor application sites and surfaces. The “Indoor Use” and “Mosquito Control” sections should be combined. The header should read “Indoor Residual Surface Applications – Crack and Crevice and Spot treatment for control of Aedes spp. Mosquitoes.”

6. **Note to Reviewer and PM:** The data presented in MRIDs 48646915 and -16 together with MRID48646904 and an un assigned study make reference to the analytical method for deltamethrin detection, which appears to be a destructive method because only about 50% of the deltamethrin in solution can be recovered by the method. The product chemistry review did not mention this issue but the efficacy studies documented this problem. The use of a 0.7% stock solution was the basis for preparing successful dilutions of the product based on the chemistry data provided.